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MISCELLANEOUS REPORT NO. 9

COMMODITY DRAIN FROM FORESTS OF THE LAKE STATES

1947

By Arthur G. Horn, Forest Economist

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
Lake States Forest Experiment Station

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INTRODUCTION

Shortly after World War II, a field survey was initiated to obtain accurate information on the forest resources of the Lake States. Collection and compilation of timber drain statistics was one of several important phases of this survey.

As a means of determining the annual drain, the Station has obtained annual or periodic reports for the principal forest industries. These reports cover either the year's production of finished products; or the receipts of sawlogs and bolts at the plants. From them the Station computes commodity drain, that is, the amount of live merchantable timber removed through cutting, including logging waste, during the year.

To meet the frequent requests for production and drain data resulting from the survey the Station has prepared a set of tables giving Lake States production and drain figures for 1947. In using the data, it is important to keep in mind the standards and definitions used in compiling the information. (See definitions, page 2.)

Basis for Production Statistics

The Bureau of the Census collected and published Lake States lumber production statistics for 1947. The data are based on 100-percent coverage of sawmills. These lumber production figures and the 1946-48 average of interstate log shipments were used as a basis for sawlog and box-bolt production estimates.

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1. The author gratefully acknowledges the assistance provided in some of the field work by Z. A. Zasada, J. R. Neetzol, Foresters, Lake States Forest Experiment Station; and W. H. Koepp, Chemical Engineer, Forest Products Research Division, Michigan College of Mining and Technology. Acknowledgement is also due to the many owners and operators of wood-using mills and plants in the Lake States region who furnished the basic information necessary for this report.
 - 2/ Maintained by the U. S. Department of Agriculture, Forest Service, in cooperation with the University of Minnesota, at University Farm, St. Paul 1, Minnesota.

For pulpwood, piling, poles, hewed ties, and mine materials (timber, cribbing, poles, lagging, etc.) all mills, plants, distributors, wholesalers, and tie contractors were canvassed early in 1948. The volume of bolts and piece material received at the mills or handled by timber brokers during the calendar year was used as a basis for production estimates. Additional information for poles and posts was also obtained from carloading reports of all railroads operating in the northern half of the region.

Production statistics for such items as veneer, chemical wood, excelsior, and cooperage were obtained by interpolating between 1946 and 1948 figures.

Because financial limitations precluded making special surveys, estimates for fuelwood, posts, and some miscellaneous items were based largely on surveys made during the latter stages of World War II. Some adjustments were made on the basis of more recent findings from wholesalers and distributors.

Conversion Factors

The Station has collected supplemental information on each product as to percent of wood volume obtained from live, dead, and cull trees, and from byproduct materials; also proportion of volume cut from saw-timber and pole-timber trees. Gross volumes of individual products were determined by information furnished by industry. For example, stock records for posts, poles, and piling showed the number of pieces by length, top, and butt diameters. Such information made possible calculations of gross volume for each product. By incorporating these findings with data collected during a previous field survey (1936-37), a set of conversion and waste factors were prepared which are closely in line with present utilization standards of wood-using industries.

General Limitations of Data

The forest survey accuracy goal for drain data is +5 percent per billion cubic feet, which would permit a standard error of slightly more than 6 percent on the 1947 estimate for the Lake States. Because of the absence of an accurate survey for fuelwood for that year, the estimates presented here may not be within that limit. We feel, however, that the estimates are the best obtainable at this time and will serve a useful purpose. Figures for most products are within the proposed limits.

Survey Definitions

Commodity Production

The gross volume of a forest product made from any class of material from commercial or noncommercial forest lands. Production has been expressed in the following standard survey units: Board-feet log scale International 1/4-inch rule; feet board measure lumber tally; cord (4x4x8 feet), rough wood basis; number of pieces; and number of cubic feet (inside bark).

Commodity Drain

The net volume of timber removed from growing stock on commercial forest lands through cutting and logging waste during the year, expressed in board foot, International 1/4-inch rule and cubic foot (i.b.).

Drain from Saw-Timber Trees

The net volume (board foot, International 1/4-inch) of the log portion in softwood trees 9 inches and larger and hardwood trees 11 inches and larger, d.b.h., removed during logging operations. The cubic-foot volume shown includes both the saw-timber equivalent plus the volume in the tops of softwood trees to a 4-inch minimum.

Drain from Pole-Timber Trees

The net volume in cubic feet (i.b.) of pole timber removed through cutting during the year. Included in this class are softwood trees from 5.0- to 8.9-inches and hardwood trees from 5.0- to 10.9-inches d.b.h. It includes cubic-foot volume found in the tree stems to a minimum top diameter of 4 inches (i.b.).

Table 1.- Sawlog and box-bolt production in the Lake States - 1947

Species and origin	Volume cut and destination				Species and origin	Volume cut and destination			
	Total	Minn.	Wis.	Mich.		Total	Minn.	Wis.	Mich.
	M bd.ft., Int'l. 1/4-inch					M bd.ft., Int'l. 1/4-inch			
White pine	74,700	15,525	37,240	21,935	Elm	73,655	15,400	28,175	30,080
Minnesota	15,525	15,525	-	-	Minnesota	15,400	15,400	-	-
Wisconsin	36,380	-	36,260	120	Wisconsin	27,435	-	27,395	40
Michigan	22,795	-	980	21,815	Michigan	30,820	-	780	30,040
Red pine	69,705	30,010	29,640	10,055	Boech	24,725	-	1,225	23,500
Minnesota	30,010	30,010	-	-	Minnesota	-	-	-	-
Wisconsin	29,555	-	29,535	20	Wisconsin	1,115	-	1,115	-
Michigan	10,140	-	105	10,035	Michigan	23,610	-	110	23,500
Jack pine	80,785	57,955	9,120	13,710	Oak	121,760	13,765	74,765	33,230
Minnesota	57,955	57,955	-	-	Minnesota	13,765	13,765	-	-
Wisconsin	8,995	-	8,965	30	Wisconsin	74,545	-	74,535	10
Michigan	13,835	-	155	13,680	Michigan	33,450	-	230	33,220
Spruce	15,175	6,180	1,795	7,200	Aspen	186,955	67,855	77,485	41,615
Minnesota	6,180	6,180	-	-	Minnesota	67,420	67,420	-	-
Wisconsin	1,770	-	1,690	80	Wisconsin	76,105	435	75,235	435
Michigan	7,225	-	105	7,120	Michigan	43,430	-	2,250	41,180
Balsam	8,585	4,715	1,100	2,770	Cottonwood	13,450	8,330	1,990	3,130
Minnesota	4,715	4,715	-	-	Minnesota	8,330	8,330	-	-
Wisconsin	1,090	-	1,085	5	Wisconsin	1,990	-	1,990	-
Michigan	2,780	-	15	2,765	Michigan	3,130	-	-	3,130
Lamarack	4,620	2,740	1,490	390	Ash	22,195	4,275	10,105	7,815
Minnesota	2,740	2,740	-	-	Minnesota	4,275	4,275	-	-
Wisconsin	1,490	-	1,490	-	Wisconsin	9,885	-	9,810	75
Michigan	390	-	-	390	Michigan	8,035	-	295	7,740
Cedar	11,060	1,245	2,575	7,240	Hickory	860	-	145	715
Minnesota	1,245	1,245	-	-	Minnesota	-	-	-	-
Wisconsin	2,500	-	2,495	5	Wisconsin	145	-	145	-
Michigan	7,315	-	80	7,235	Michigan	715	-	-	715
Hemlock	211,595	-	75,000	136,595	Cherry	1,095	20	85	990
Minnesota	-	-	-	-	Minnesota	20	20	-	-
Wisconsin	69,075	-	67,525	1,550	Wisconsin	85	-	85	-
Michigan	142,520	-	7,475	135,045	Michigan	990	-	-	990
Softwood					Walnut	330	25	45	260
total	476,225	118,370	157,960	199,895	Minnesota	25	25	-	-
Minnesota	118,370	118,370	-	-	Wisconsin	45	-	45	-
Wisconsin	150,855	-	149,045	1,810	Michigan	260	-	-	260
Michigan	207,000	-	8,915	198,085	Misc.	4,175	280	1,485	2,410
Maple	253,735	2,230	82,275	169,230	Minnesota	280	280	-	-
Minnesota	2,230	2,230	-	-	Wisconsin	1,485	-	1,485	-
Wisconsin	69,555	-	68,410	1,145	Michigan	2,410	-	-	2,410
Michigan	181,950	-	13,865	168,085	Hardwood				
Birch	78,430	3,165	25,895	49,370	total	834,345	126,435	327,785	380,125
Minnesota	3,165	3,165	-	-	Minnesota	126,000	126,000	-	-
Wisconsin	20,290	-	18,720	1,570	Wisconsin	305,740	435	301,940	3,365
Michigan	54,975	-	7,175	47,800	Michigan	402,605	-	25,845	376,760
Basswood	52,980	11,090	24,110	17,780	All				
Minnesota	11,090	11,090	-	-	Species	1,310,570	244,805	485,745	580,020
Wisconsin	23,060	-	22,970	90	Minn.	244,370	244,370	-	-
Michigan	18,830	-	1,140	17,690	Wis.	456,595	435	450,985	5,175
					Mich.	609,605	-	34,760	574,845

Table 2.- Production of logs for commercial veneer industry in the Lake States

1947

Species and origin	Volume cut and destination				Imports		
	Total	Minnesota	Wisconsin	Michigan	Other U. S.	Other U. S.	Foreign Canada
M board feet, International 1/4-inch Rule							
White pine	530	-	480	50	-	-	-
Minnesota	10	-	10	-	-	-	-
Wisconsin	150	-	150	-	-	-	-
Michigan	370	-	320	50	-	-	-
Maple	33,270	-	18,800	14,300	170	70	400
Minnesota	330	-	330	-	-	-	-
Wisconsin	7,240	-	7,200	-	40	50	300
Michigan	25,700	-	11,270	14,300	130	20	100
Birch	23,350	290	17,550	5,510	-	-	6,490
Minnesota	250	250	-	-	-	-	-
Wisconsin	4,460	40	4,420	-	-	-	4,900
Michigan	18,640	-	13,130	5,510	-	-	1,590
Basswood	8,440	100	7,460	780	100	470	20
Minnesota	1,460	100	1,360	-	-	-	-
Wisconsin	3,990	-	3,960	-	30	400	20
Michigan	2,990	-	2,140	780	70	70	-
Elm	6,780	-	5,940	780	60	360	30
Minnesota	900	-	900	-	-	-	-
Wisconsin	3,200	-	3,200	-	-	300	30
Michigan	2,680	-	1,840	780	60	60	-
Beech	4,910	-	560	4,350	-	-	-
Minnesota	-	-	-	-	-	-	-
Wisconsin	70	-	70	-	-	-	-
Michigan	4,840	-	490	4,350	-	-	-
Oak	3,580	-	3,200	300	80	140	110
Minnesota	190	-	190	-	-	-	-
Wisconsin	2,730	-	2,670	40	20	40	70
Michigan	660	-	340	260	60	100	40
Aspen	3,540	3,370	130	40	-	-	-
Minnesota	3,310	3,310	-	-	-	-	-
Wisconsin	190	60	130	-	-	-	-
Michigan	40	-	-	40	-	-	-
Ash	1,680	-	1,570	110	-	50	-
Minnesota	80	-	80	-	-	-	-
Wisconsin	620	-	620	-	-	50	-
Michigan	980	-	870	110	-	-	-
Walnut	420	-	-	-	420	30	-
Minnesota	80	-	-	-	80	-	-
Wisconsin	210	-	-	-	210	-	-
Michigan	130	-	-	-	130	30	-
Other 1/	220	-	170	10	40	720	40
Minnesota	110	-	110	-	-	-	-
Wisconsin	50	-	50	-	-	140	40
Michigan	60	-	10	10	40	580	-
All Species	86,720	3,760	55,860	26,230	870	1,840	7,090
Minnesota	6,720	3,660	2,980	-	80	-	-
Wisconsin	22,910	100	22,470	40	300	980	5,360
Michigan	57,090	-	30,410	26,190	490	860	1,730

1/ Cottonwood, hackberry, sycamore, cherry, and yellow-poplar.

Table 3.- Production of logs and bolts for container veneer industry, in the
Lake States - 1947

Species and origin	Volume cut logs and bolts		Imports	
	Veneer logs	Heading stock	Other U. S.	Canada and foreign
	M bd. ft., Int'l. 1/4-inch	Standard cords (rough)		
White pine	40	-	-	-
Minnesota	-	-	-	-
Wisconsin	40	-	-	-
Michigan	-	-	-	-
Softwood total	40	-	-	-
Minnesota	-	-	-	-
Wisconsin	40	-	-	-
Michigan	-	-	-	-
Maple	8,790	1,440	-	-
Minnesota	100	-	-	-
Wisconsin	890	1,340	-	-
Michigan	7,800	100	-	-
Birch	1,810	450	-	-
Minnesota	80	-	-	-
Wisconsin	20	350	-	-
Michigan	1,710	100	-	-
Basswood	2,840	3,350	-	-
Minnesota	700	80	-	-
Wisconsin	1,120	3,220	-	-
Michigan	1,020	50	-	-
Elm	11,170	1,010	30	-
Minnesota	180	-	-	-
Wisconsin	4,930	920	-	-
Michigan	6,060	90	30	-
Beech	3,380	100	10	-
Minnesota	-	-	-	-
Wisconsin	10	-	-	-
Michigan	3,370	100	10	-
Oak	590	50	-	-
Minnesota	-	-	-	-
Wisconsin	150	50	-	-
Michigan	440	-	-	-
Aspen	750	10,190	-	-
Minnesota	200	50	-	-
Wisconsin	340	10,140	-	-
Michigan	210	-	-	-
Other 1/	1,055	920	10	-
Minnesota	135	10	-	-
Wisconsin	280	670	-	-
Michigan	640	240	10	-
Hardwood total	30,385	17,510	50	-
Minnesota	1,395	140	-	-
Wisconsin	7,740	16,690	-	-
Michigan	21,250	680	50	-
All Species	30,425	17,510	50	-
Minnesota	1,395	140	-	-
Wisconsin	7,780	16,690	-	-
Michigan	21,250	680	50	-

1/ Cottonwood, ash, yellow-poplar, and sycamore.

Table 4.- Pulpwood production and imports in the Lake States - 1947

Species and origin	Volume cut and destination					Imports	
	Total	Minnesota	Wisconsin	Michigan	Other U. S.	Other U. S.	Canada and foreign
M standard cords - unpeeled							
Pine	510	119	267	124	-	20	63
Minnesota	266	119	126	21	-	-	41
Wisconsin	158	-	116	42	-	20	5
Michigan	86	-	25	61	-	-	17
Spruce	388	111	238	28	11	4	545
Minnesota	224	111	102	-	11	-	11
Wisconsin	31	-	31	-	-	4	445
Michigan	133	-	105	28	-	-	89
Balsam	311	48	227	35	1	-	27
Minnesota	119	48	70	-	1	-	-
Wisconsin	53	-	53	-	-	-	2
Michigan	139	-	104	35	-	-	25
Tamarack	25	6	18	1	-	-	-
Minnesota	18	6	12	-	-	-	-
Wisconsin	5	-	5	-	-	-	-
Michigan	2	-	1	1	-	-	-
Hemlock	199	-	134	65	-	-	-
Minnesota	-	-	-	-	-	-	-
Wisconsin	50	-	50	-	-	-	-
Michigan	149	-	84	65	-	-	-
Softwood total	1,433	284	884	253	12	24	635
Minnesota	627	284	310	21	12	-	52
Wisconsin	297	-	255	42	-	24	452
Michigan	509	-	319	190	-	-	131
Birch	14	-	13	1	-	-	-
Minnesota	-	-	-	-	-	-	-
Wisconsin	8	-	8	-	-	-	-
Michigan	6	-	5	1	-	-	-
Aspen	561	156	332	39	34	-	26
Minnesota	221	156	31	-	34	-	2
Wisconsin	187	-	187	-	-	-	13
Michigan	153	-	114	39	-	-	11
Misc. hardwoods	10	-	-	10	-	-	-
Minnesota	-	-	-	-	-	-	-
Wisconsin	-	-	-	-	-	-	-
Michigan	10	-	-	10	-	-	-
Hardwood total	585	156	345	50	34	-	26
Minnesota	221	156	31	-	34	-	2
Wisconsin	195	-	195	-	-	-	13
Michigan	169	-	119	50	-	-	11
Slabs, etc.	4	3	1	-	-	-	-
Minnesota	3	3	-	-	-	-	-
Wisconsin	1	-	1	-	-	-	-
Michigan	-	-	-	-	-	-	-
All Species	2,022	443	1,230	303	46	24	661
Minnesota	851	443	341	21	46	-	54
Wisconsin	493	-	451	42	-	24	465
Michigan	678	-	438	240	-	-	142

Table 5.- Production of miscellaneous cordwood in the Lake States - 1947

Species and origin	Volume cut, by states			Species and origin	Volume cut, by states		
	Fuel-	Chemical	Excelsior		Fuel-	Chemical	Excelsior
	wood <u>1/</u>	wood			wood <u>1/</u>	wood	
	M standard cords				M standard cords		
White pine	170	-	-	Birch	330	29	-
Minnesota	20	-	-	Minnesota	90	-	-
Wisconsin	100	-	-	Wisconsin	130	1	-
Michigan	50	-	-	Michigan	110	28	-
Red pine	30	-	-	Basswood	160	-	3
Minnesota	10	-	-	Minnesota	80	-	-
Wisconsin	10	-	-	Wisconsin	40	-	3
Michigan	10	-	-	Michigan	40	-	-
Jack pine	155	-	-	Elm	440	4	-
Minnesota	70	-	-	Minnesota	140	-	-
Wisconsin	80	-	-	Wisconsin	100	-	-
Michigan	5	-	-	Michigan	200	4	-
Spruce	45	-	-	Beech	45	8	-
Minnesota	30	-	-	Minnesota	-	-	-
Wisconsin	5	-	-	Wisconsin	5	1	-
Michigan	10	-	-	Michigan	40	7	-
Balsam	50	-	-	Oak	1,190	3	-
Minnesota	40	-	-	Minnesota	240	-	-
Wisconsin	5	-	-	Wisconsin	590	-	-
Michigan	5	-	-	Michigan	360	3	-
Tamarack	290	-	-	Aspen	860	3	86
Minnesota	220	-	-	Minnesota	380	-	2
Wisconsin	60	-	-	Wisconsin	240	3	39
Michigan	10	-	-	Michigan	240	-	45
Cedar	60	-	-	Misc.	295	4	-
Minnesota	10	-	-	Minnesota	150	-	-
Wisconsin	40	-	-	Wisconsin	75	-	-
Michigan	10	-	-	Michigan	70	4	-
Hemlock	300	-	-	Hdwd. total	3,900	113	89
Minnesota	-	-	-	Minnesota	1,100	-	2
Wisconsin	200	-	-	Wisconsin	1,400	8	42
Michigan	100	-	-	Michigan	1,400	105	45
Softwd. total	1,100	-	-	Slabs, etc.	670	12	-
Minnesota	400	-	-	Minnesota	120	-	-
Wisconsin	500	-	-	Wisconsin	250	2	-
Michigan	200	-	-	Michigan	300	10	-
Maple	580	62	-	All species	5,670	125	89
Minnesota	20	-	-	Minnesota	1,620	-	2
Wisconsin	220	3	-	Wisconsin	2,150	10	42
Michigan	340	59	-	Michigan	1,900	115	45

1/ Five-year average (1945-49).

Table 6.- Production of miscellaneous piece products in the Lake States - 1947

Species and origin	Piling	Utility, poles	Fence, posts	Hewn ties	Species and origin	Piling	Utility, poles	Fence, posts	Hewn ties
Thousand pieces					Thousand pieces				
White pine	-	-	-	-	Maple	.6	-	400	-
Minnesota	-	-	-	-	Minnesota	-	-	200	-
Wisconsin	-	-	-	-	Wisconsin	.6	-	100	-
Michigan	-	-	-	-	Michigan	-	-	100	-
Red pine	10	15	200	-	Birch	-	-	250	-
Minnesota	9	15	100	-	Minnesota	-	-	50	-
Wisconsin	1	-	100	-	Wisconsin	-	-	100	-
Michigan	-	-	-	-	Michigan	-	-	100	-
Jack pine	2	56	550	-	Elm	4	-	450	-
Minnesota	2	55	300	-	Minnesota	-	-	50	-
Wisconsin	-	1	150	-	Wisconsin	4	-	200	-
Michigan	-	-	100	-	Michigan	-	-	200	-
Spruce	-	-	-	1	Oak	.6	-	14,600	-
Minnesota	-	-	-	-	Minnesota	-	-	3,000	-
Wisconsin	-	-	-	-	Wisconsin	.6	-	7,800	-
Michigan	-	-	-	1	Michigan	-	-	3,800	-
Balsam	-	-	250	-	Aspen	-	-	1,400	-
Minnesota	-	-	200	-	Minnesota	-	-	700	-
Wisconsin	-	-	50	-	Wisconsin	-	-	400	-
Michigan	-	-	-	-	Michigan	-	-	300	-
Tamarack	-	-	750	1	Ash	.1	-	-	-
Minnesota	-	-	300	1	Minnesota	-	-	-	-
Wisconsin	-	-	300	-	Wisconsin	.1	-	-	-
Michigan	-	-	150	-	Michigan	-	-	-	-
Cedar	-	230	7,400	15	Miscellaneous	1/.1	-	600	-
Minnesota	-	150	1,000	1	Minnesota	-	-	100	-
Wisconsin	-	15	1,400	-	Wisconsin	.1	-	300	-
Michigan	-	65	5,000	14	Michigan	-	-	200	-
Hemlock	-	-	150	2	Hardwood total	5.4	-	17,700	-
Minnesota	-	-	-	-	Minnesota	-	-	4,100	-
Wisconsin	-	-	100	-	Wisconsin	5.4	-	8,900	-
Michigan	-	-	50	2	Michigan	-	-	4,700	-
Softwood total	12	301	9,300	19	All Species	17.4	301	27,000	19
Minnesota	11	220	1,900	2	Minnesota	11	220	6,000	2
Wisconsin	1	16	2,100	-	Wisconsin	6.4	16	11,000	-
Michigan	-	65	5,300	17	Michigan	-	65	10,000	17

1/ Hickory.

Table 7.- Production of mining materials in the Lake States - 1947

Species and origin	Volume of logs and bolts cut by states				Species and origin	Volume of logs and bolts cut by states			
	Total	Mine 'timbers'	Mine 'lagging'	Other 1/		Total	Mine 'timbers'	Mine 'lagging'	Other 1/
	Thousand cubic feet					Thousand cubic feet			
White pine	20	15	-	5	Maple	1,465	1,110	-	355
Minnesota	15	15	-	-	Minnesota	20	20	-	-
Wisconsin	-	-	-	-	Wisconsin	70	50	-	20
Michigan	5	-	-	5	Michigan	1,375	1,040	-	335
Red pine	65	60	-	5	Birch	455	385	-	70
Minnesota	65	60	-	5	Minnesota	5	5	-	-
Wisconsin	-	-	-	-	Wisconsin	45	30	-	15
Michigan	-	-	-	-	Michigan	405	350	-	55
Jack pine	955	690	150	115	Elm	110	100	-	10
Minnesota	955	690	150	115	Minnesota	30	30	-	-
Wisconsin	-	-	-	-	Wisconsin	10	10	-	-
Michigan	-	-	-	-	Michigan	70	60	-	10
Spruce	5	-	-	5	Beech	85	80	-	5
Minnesota	-	-	-	-	Minnesota	-	-	-	-
Wisconsin	-	-	-	-	Wisconsin	-	-	-	-
Michigan	5	-	-	5	Michigan	85	80	-	5
Tamarack	1,920	320	225	1,375	Oak	15	15	-	-
Minnesota	875	265	-	610	Minnesota	-	-	-	-
Wisconsin	140	10	5	125	Wisconsin	5	5	-	-
Michigan	905	45	220	640	Michigan	10	10	-	-
Cedar	1,725	-	1,710	15	Ash	55	55	-	-
Minnesota	270	-	270	-	Minnesota	55	55	-	-
Wisconsin	85	-	85	-	Wisconsin	-	-	-	-
Michigan	1,370	-	1,355	15	Michigan	-	-	-	-
Hemlock	335	300	5	30	Hdwd. total	2,185	1,745	-	440
Minnesota	-	-	-	-	Minnesota	110	110	-	-
Wisconsin	10	5	-	5	Wisconsin	130	95	-	35
Michigan	325	295	5	25	Michigan	1,945	1,540	-	405
Sftwd. total	5,025	1,385	2,090	1,550	All Species	7,210	3,130	2,090	1,990
Minnesota	2,180	1,030	420	730	Minnesota	2,290	1,140	420	730
Wisconsin	235	15	90	130	Wisconsin	365	110	90	165
Michigan	2,610	340	1,580	690	Michigan	4,555	1,880	1,580	1,095

1/ Mine cribbing, poles, trestle logs, hewed shaft timbers, smelter brands, etc.

Table 8.- Production of cooperage logs and bolts in the Lake States - 1947

Species	Total	Volume cut, by states		
		Minnesota	Wisconsin	Michigan
<u>M bd. ft., Int'l. 1/4-inch rule</u>				
Maple	100	100	-	-
Basswood	700	250	450	-
Elm	1,510	1,500	10	-
Oak	950	500	450	-
Aspen	610	200	410	-
Cottonwood	400	400	-	-
Ash	50	50	-	-
All species	4,320	3,000	1,320	-

Table 9.- Production of miscellaneous products^{1/} in the Lake States - 1947
(Five-year average 1945-49)

Species	Total	Volume cut, by states		
		Minnesota	Wisconsin	Michigan
		Thousand cubic feet		
White pine	180	60	60	60
Red pine	90	40	20	30
Jack pine	210	90	40	80
Spruce	50	20	10	20
Balsam	140	50	20	70
Tamarack	50	20	10	20
Cedar	690	90	160	440
Hemlock	40	-	20	20
Total softwoods	1,450	370	340	740
Maple	410	-	90	320
Birch	320	280	30	10
Basswood	170	80	70	20
Elm	80	-	-	80
Beech	670	-	-	670
Oak	100	10	10	80
Aspen	1,630	1,070	380	180
Ash	10	-	-	10
Other	70	-	20	50
Total hardwoods	3,460	1,440	600	1,420
All species	4,910	1,810	940	2,160

^{1/} Rough forest products used for manufacture of matches, clothespins, bowling pins, handles, woodenware, rustic furniture, toys, shingles, lath, log cabin material, etc.

Table 10.- Sawlog and box-bolt timber drain in the Lake States - 1947

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
White pine ...	60,660	16,480	60,660	12,500	3,980
Minnesota ..	9,250	3,530	9,250	1,910	1,620
Wisconsin ..	31,600	8,010	31,600	6,510	1,500
Michigan ...	19,810	4,940	19,810	4,080	860
Red pine	52,360	15,500	52,360	10,780	4,720
Minnesota ..	17,880	6,810	17,880	3,680	3,130
Wisconsin ..	25,670	6,500	25,670	5,290	1,210
Michigan ...	8,810	2,190	8,810	1,810	380
Jack pine	51,290	17,500	51,290	10,570	6,930
Minnesota ..	34,530	13,150	34,530	7,110	6,040
Wisconsin ..	4,740	1,350	4,740	980	370
Michigan ...	12,020	3,000	12,020	2,480	520
Spruce	11,500	3,350	11,500	2,370	980
Minnesota ..	3,680	1,400	3,680	760	640
Wisconsin ..	1,540	390	1,540	320	70
Michigan ...	6,280	1,560	6,280	1,290	270
Balsam	6,170	1,920	6,170	1,280	640
Minnesota ..	2,810	1,070	2,810	580	490
Wisconsin ..	950	240	950	200	40
Michigan ...	2,410	610	2,410	500	110
Tamarack	3,270	1,050	3,270	680	370
Minnesota ..	1,630	630	1,630	340	290
Wisconsin ..	1,300	330	1,300	270	60
Michigan ...	340	90	340	70	20
Cedar	9,280	2,420	9,280	1,910	510
Minnesota ..	740	280	740	150	130
Wisconsin ..	2,180	550	2,180	450	100
Michigan ...	6,360	1,590	6,360	1,310	280
Hemlock	183,810	46,050	183,810	37,860	8,190
Minnesota ..	-	-	-	-	-
Wisconsin ..	60,000	15,200	60,000	12,360	2,840
Michigan ...	123,810	30,850	123,810	25,500	5,350
Softwood total	378,340	104,270	378,340	77,950	26,320
Minnesota ..	70,520	26,870	70,520	14,530	12,340
Wisconsin ..	127,980	32,570	127,980	26,380	6,190
Michigan ...	179,840	44,830	179,840	37,040	7,790

Table 10.- Sawlog and box-bolt timber drain in the Lake States - 1947
(continued)

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Maple	228,310	61,650	228,310	54,340	7,310
Minnesota ..	1,670	540	1,670	400	140
Wisconsin ..	60,280	16,260	60,280	14,350	1,910
Michigan ...	166,360	44,850	166,360	39,590	5,260
Birch	67,600	18,340	67,600	16,080	2,260
Minnesota ..	2,370	750	2,370	560	190
Wisconsin ..	17,580	4,740	17,580	4,180	560
Michigan ...	47,650	12,850	47,650	11,340	1,510
Basswood	44,600	12,450	44,600	10,620	1,830
Minnesota ..	8,300	2,660	8,300	1,980	680
Wisconsin ..	19,980	5,390	19,980	4,760	630
Michigan ...	16,320	4,400	16,320	3,880	520
Elm	62,010	17,290	62,010	14,760	2,530
Minnesota ..	11,520	3,680	11,520	2,740	940
Wisconsin ..	23,780	6,410	23,780	5,660	750
Michigan ...	26,710	7,200	26,710	6,360	840
Beech	21,420	5,780	21,420	5,100	680
Minnesota ..	-	-	-	-	-
Wisconsin ..	960	260	960	230	30
Michigan ...	20,460	5,520	20,460	4,870	650
Oak	103,810	28,500	103,810	24,710	3,790
Minnesota ..	10,300	3,290	10,300	2,450	840
Wisconsin ..	64,610	17,420	64,610	15,380	2,040
Michigan ...	28,900	7,790	28,900	6,880	910
Aspen	91,040	52,760	91,040	23,630	29,130
Minnesota ..	40,140	18,210	40,140	10,030	8,180
Wisconsin ..	29,710	22,630	29,710	8,430	14,200
Michigan ...	21,190	11,920	21,190	5,170	6,750
Cottonwood ...	10,670	3,180	10,670	2,540	640
Minnesota ..	6,230	1,990	6,230	1,480	510
Wisconsin ..	1,720	460	1,720	410	50
Michigan ...	2,720	730	2,720	650	80
Miscellaneous	24,310	6,720	24,310	5,780	940
Minnesota	3,450	1,090	3,450	810	280
Wisconsin	10,110	2,720	10,110	2,410	310
Michigan	10,750	2,910	10,750	2,560	350
Hardwood total	653,770	206,670	653,770	157,560	49,110
Minnesota	83,980	32,210	83,980	20,450	11,760
Wisconsin	228,730	76,290	228,730	55,810	20,480
Michigan	341,060	98,170	341,060	81,300	16,870
All species	1,032,110	310,940	1,032,110	235,510	75,430
Minnesota	154,500	59,080	154,500	34,980	24,100
Wisconsin	356,710	108,860	356,710	82,190	26,670
Michigan	520,900	143,000	520,900	118,340	24,660

NOTE - Miscellaneous species:	Ash	Cherry	Hickory	Walnut	Other
Minnesota (percent)	92	1	-	1	6
Wisconsin (percent)	85	1	1	1	12
Michigan (percent)	65	8	6	2	19

Table 11.- Veneer log (commercial) timber drain in the Lake States - 1947

Species and origin	Net timber drain, by size class				Species and origin	Net timber drain, by size class			
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.		M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.		M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.
White pine ..	540	100	540	100	Oak	3,710	700	3,710	690
Minnesota ..	10	-	10	-	Minnesota ..	190	40	190	40
Wisconsin ..	150	30	150	30	Wisconsin ..	2,820	520	2,820	510
Michigan ...	380	70	380	70	Michigan ...	700	140	700	140
Softwood total	540	100	540	100	Aspen	180	60	180	50
Minnesota ..	10	-	10	-	Minnesota ..	-	-	-	-
Wisconsin ..	150	30	150	30	Wisconsin ..	140	50	140	40
Michigan ...	380	70	380	70	Michigan ...	40	10	40	10
Maple	35,140	6,730	35,140	6,690	Cottonwood ...	120	20	120	20
Minnesota ..	340	60	340	60	Minnesota ..	120	20	120	20
Wisconsin ..	7,480	1,400	7,480	1,360	Wisconsin ..	-	-	-	-
Michigan ...	27,320	5,270	27,320	5,270	Michigan ...	-	-	-	-
Birch	24,690	4,720	24,690	4,700	Miscellaneous.	2,380	460	2,380	460
Minnesota ..	280	50	280	50	Minnesota ..	160	40	160	40
Wisconsin ..	4,600	850	4,600	830	Wisconsin ..	980	180	980	180
Michigan ...	19,810	3,820	19,810	3,820	Michigan ...	1,240	240	1,240	240
Basswood	8,840	1,670	8,840	1,650	Hardwood total	87,280	16,700	87,280	16,570
Minnesota ..	1,540	290	1,540	290	Minnesota ..	3,550	680	3,550	670
Wisconsin ..	4,120	770	4,120	750	Wisconsin ..	23,450	4,390	23,450	4,270
Michigan ...	3,180	610	3,180	610	Michigan ...	60,280	11,630	60,230	11,630
Elm	7,080	1,350	7,080	1,320	All species ..	87,820	16,800	87,820	16,670
Minnesota ..	920	180	920	170	Minnesota ..	3,560	680	3,560	670
Wisconsin ..	3,310	620	3,310	600	Wisconsin ..	23,600	4,420	23,600	4,300
Michigan ...	2,850	550	2,850	550	Michigan ...	60,660	11,700	60,660	11,700
Beech	5,140	990	5,140	990					
Minnesota ..	-	-	-	-					
Wisconsin ..	-	-	-	-					
Michigan ...	5,140	990	5,140	990					
NOTE: Miscellaneous species:					Other				
Minnesota (percent)					-				
Wisconsin (percent)					10				
Michigan (percent)					5				

Table 12.- Veneer logs and bolts (container) timber drain in the Lake States - 1941

Net timber drain by size classes					Net timber drain by size classes				
Species and origin	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	Species and origin	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.
White pine ...	40	10	40	10	Oak	610	140	130	10
Minnesota ..	-	-	-	-	Minnesota ..	-	-	-	-
Wisconsin ..	40	10	40	10	Wisconsin ..	150	40	30	10
Michigan ...	-	-	-	-	Michigan ...	460	100	100	-
Softwood total	40	10	40	10	Aspen	1,170	1,170	260	320
Minnesota ..	-	-	-	-	Minnesota ..	180	60	50	10
Wisconsin ..	40	10	40	10	Wisconsin ..	780	1,070	160	310
Michigan ...	-	-	-	-	Michigan ...	210	50	50	-
Maple	9,620	2,115	9,620	85	Cottonwood ...	290	65	60	5
Minnesota ..	90	25	90	5	Minnesota ..	120	25	20	5
Wisconsin ..	1,270	330	1,270	60	Wisconsin ..	50	10	10	-
Michigan ...	3,260	1,760	3,260	20	Michigan ...	120	30	30	-
Birch	2,050	445	2,050	15	Miscellaneous	1,090	250	230	20
Minnesota ..	70	15	70	5	Minnesota ..	-	-	-	-
Wisconsin ..	140	40	140	10	Wisconsin ..	440	110	90	20
Michigan ...	1,840	390	1,840	-	Michigan ...	650	140	140	-
Basswood	3,890	950	3,890	140	Hardwood total	33,620	8,550	7,090	1,460
Minnesota ..	650	160	650	30	Minnesota ..	1,270	320	260	60
Wisconsin ..	2,140	560	2,140	110	Wisconsin ..	9,700	3,390	2,040	1,350
Michigan ...	1,100	230	1,100	-	Michigan ...	22,650	4,840	4,790	50
Elm	11,300	2,635	11,300	255	All species ..	33,660	8,560	7,100	1,460
Minnesota ..	160	35	160	5	Minnesota ..	1,270	320	260	60
Wisconsin ..	4,720	1,230	4,720	230	Wisconsin ..	9,740	3,400	2,050	1,350
Michigan ...	6,420	1,370	6,420	20	Michigan ...	22,650	4,840	4,790	50
Beech	3,600	770	3,600	10					
Minnesota ..	-	-	-	-					
Wisconsin ..	10	-	10	-					
Michigan ...	3,590	770	3,590	10					
NOTE: Miscellaneous species:					Yellow-poplar				
Wisconsin (percent)					Sycamore				
Michigan (percent)					Ash				
					100				
					30				
					40				

Table 13.- Pulpwood timber drain in the Lake States - 1947

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Jack pine	13,860	38,050	13,860	2,660	35,390
Minnesota	7,890	19,910	7,890	1,510	18,400
Wisconsin	3,820	12,410	3,820	750	11,660
Michigan	2,150	5,730	2,150	400	5,330
Spruce	10,750	28,140	10,750	2,040	26,100
Minnesota	6,680	16,860	6,680	1,280	15,580
Wisconsin	750	2,420	750	140	2,280
Michigan	3,320	8,860	3,320	620	8,240
Balsam	8,290	22,360	8,290	1,580	20,780
Minnesota	3,530	8,910	3,530	680	8,230
Wisconsin	1,290	4,200	1,290	250	3,950
Michigan	3,470	9,250	3,470	650	8,600
Tamarack	720	1,920	720	140	1,780
Minnesota	540	1,360	540	100	1,260
Wisconsin	130	430	130	30	400
Michigan	50	130	50	10	120
Hemlock	50,490	15,320	50,490	9,730	5,590
Minnesota	-	-	-	-	-
Wisconsin	1,090	3,930	1,090	210	3,720
Michigan	49,400	11,390	49,400	9,520	1,870
Softwood total ..	84,110	105,790	84,110	16,150	89,640
Minnesota	18,640	47,040	18,640	3,570	43,470
Wisconsin	7,080	23,390	7,080	1,380	22,010
Michigan	58,390	35,360	58,390	11,200	24,160

Table 13.- Pulpwood timber drain in the Lake States - 1947
(continued)

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Maple	420	360	420	100	260
Minnesota	-	-	-	-	-
Wisconsin	-	-	-	-	-
Michigan	420	360	420	100	260
Birch	870	1,270	870	200	1,070
Minnesota	-	-	-	-	-
Wisconsin	250	750	250	60	690
Michigan	620	520	620	140	380
Basswood	100	80	100	20	60
Minnesota	-	-	-	-	-
Wisconsin	-	-	-	-	-
Michigan	100	80	100	20	60
Elm	190	160	190	40	120
Minnesota	-	-	-	-	-
Wisconsin	-	-	-	-	-
Michigan	190	160	190	40	120
Beech	20	10	20	-	10
Minnesota	-	-	-	-	-
Wisconsin	-	-	-	-	-
Michigan	20	10	20	-	10
Oak	260	220	260	60	160
Minnesota	-	-	-	-	-
Wisconsin	-	-	-	-	-
Michigan	260	220	260	60	160
Aspen	17,630	48,760	17,630	4,220	44,540
Minnesota	11,450	18,740	11,450	2,750	15,990
Wisconsin	3,880	15,880	3,880	920	14,960
Michigan	2,300	14,140	2,300	550	13,590
Hardwood total ..	19,490	50,860	19,490	4,640	46,220
Minnesota	11,450	18,740	11,450	2,750	15,990
Wisconsin	4,130	16,630	4,130	980	15,650
Michigan	3,910	15,490	3,910	910	14,580
All species	103,600	156,650	103,600	20,790	135,860
Minnesota	30,090	65,780	30,090	6,320	59,460
Wisconsin	11,210	40,020	11,210	2,360	37,660
Michigan	62,300	50,850	62,300	12,110	38,740

Table 14.- Annual fuelwood timber drain in the Lake States (5-year average
1945-49)

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole- timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
White pine	930	1,540	930	750	790
Minnesota	110	210	110	120	90
Wisconsin	450	870	450	390	480
Michigan	370	460	370	240	220
Red pine	170	280	170	150	130
Minnesota	60	100	60	60	40
Wisconsin	40	90	40	40	50
Michigan	70	90	70	50	40
Jack pine	800	1,460	800	750	710
Minnesota	400	720	400	420	300
Wisconsin	360	700	360	310	390
Michigan	40	40	40	20	20
Spruce	260	440	260	250	190
Minnesota	170	310	170	180	130
Wisconsin	20	40	20	20	20
Michigan	70	90	70	50	40
Balsam	290	490	290	280	210
Minnesota	230	410	230	240	170
Wisconsin	20	40	20	20	20
Michigan	40	40	40	20	20
Tamarack	1,580	2,950	1,580	1,670	1,280
Minnesota	1,240	2,330	1,240	1,380	950
Wisconsin	270	530	270	240	290
Michigan	70	90	70	50	40
Cedar	310	540	310	270	270
Minnesota	60	100	60	60	40
Wisconsin	180	350	180	160	190
Michigan	70	90	70	50	40
Hemlock	1,640	2,680	1,640	1,260	1,420
Minnesota	-	-	-	-	-
Wisconsin	900	1,750	900	780	970
Michigan	740	930	740	480	450
Softwood total	5,980	10,380	5,980	5,380	5,000
Minnesota	2,270	4,180	2,270	2,460	1,720
Wisconsin	2,240	4,370	2,240	1,960	2,410
Michigan	1,470	1,830	1,470	960	870

Table 14.- Annual fuelwood timber drain in the Lake States (5-year average
1945-49) (continued)

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole- timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Maple	19,960	16,150	19,960	9,150	7,000
Minnesota	700	460	700	330	130
Wisconsin	7,850	5,870	7,850	3,390	2,480
Michigan	11,410	9,820	11,410	5,430	4,390
Birch	11,950	8,770	11,950	5,270	3,500
Minnesota	3,660	2,120	3,660	1,510	610
Wisconsin	4,600	3,470	4,600	2,000	1,470
Michigan	3,690	3,130	3,690	1,760	1,420
Basswood	5,570	4,100	5,570	2,600	1,500
Minnesota	2,800	1,870	2,800	1,340	530
Wisconsin	1,430	1,070	1,430	620	450
Michigan	1,340	1,160	1,340	640	520
Elm	15,180	11,720	15,180	7,070	4,650
Minnesota	4,900	3,280	4,900	2,340	940
Wisconsin	3,570	2,670	3,570	1,540	1,130
Michigan	6,710	5,770	6,710	3,190	2,580
Beech	1,520	1,300	1,520	720	580
Minnesota	-	-	-	-	-
Wisconsin	180	140	180	80	60
Michigan	1,340	1,160	1,340	640	520
Oak	41,540	31,720	41,540	18,840	12,880
Minnesota	8,400	5,600	8,400	4,000	1,600
Wisconsin	21,060	15,730	21,060	9,090	6,640
Michigan	12,080	10,390	12,080	5,750	4,640
Aspen	19,260	32,240	19,260	8,860	23,380
Minnesota	9,450	14,780	9,450	4,750	10,030
Wisconsin	3,020	8,680	3,020	1,350	7,330
Michigan	6,790	8,780	6,790	2,760	6,020
Miscellaneous	10,280	7,550	10,280	4,790	2,760
Minnesota	5,250	3,520	5,250	2,510	1,010
Wisconsin	2,680	2,010	2,680	1,160	850
Michigan	2,350	2,020	2,350	1,120	900
Hardwood total	125,260	113,550	125,260	57,300	56,250
Minnesota	35,160	31,630	35,160	16,780	14,850
Wisconsin	44,390	39,640	44,390	19,230	20,410
Michigan	45,710	42,280	45,710	21,290	20,990
All species	131,240	123,930	131,240	62,680	61,250
Minnesota	37,430	35,810	37,430	19,240	16,570
Wisconsin	46,630	44,010	46,630	21,190	22,820
Michigan	47,180	44,110	47,180	22,250	21,860

Table 15.- Piling timber drain in the Lake States - 1947

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
White pine	<u>5</u>	<u>-</u>	<u>5</u>	<u>-</u>	<u>-</u>
Minnesota	-	-	-	-	-
Wisconsin	5	-	5	-	-
Michigan	-	-	-	-	-
Red pine	<u>1,265</u>	<u>245</u>	<u>1,265</u>	<u>245</u>	<u>-</u>
Minnesota	1,180	230	1,180	230	-
Wisconsin	85	15	85	15	-
Michigan	-	-	-	-	-
Jack pine	<u>270</u>	<u>50</u>	<u>270</u>	<u>50</u>	<u>-</u>
Minnesota	270	50	270	50	-
Wisconsin	-	-	-	-	-
Michigan	-	-	-	-	-
Softwood total ...	<u>1,540</u>	<u>295</u>	<u>1,540</u>	<u>295</u>	<u>-</u>
Minnesota	1,450	280	1,450	280	-
Wisconsin	90	15	90	15	-
Michigan	-	-	-	-	-
Maple	<u>60</u>	<u>15</u>	<u>60</u>	<u>15</u>	<u>-</u>
Minnesota	-	-	-	-	-
Wisconsin	60	15	60	15	-
Michigan	-	-	-	-	-
Elm	<u>400</u>	<u>95</u>	<u>400</u>	<u>95</u>	<u>-</u>
Minnesota	-	-	-	-	-
Wisconsin	400	95	400	95	-
Michigan	-	-	-	-	-
Oak	<u>60</u>	<u>15</u>	<u>60</u>	<u>15</u>	<u>-</u>
Minnesota	-	-	-	-	-
Wisconsin	60	15	60	15	-
Michigan	-	-	-	-	-
Miscellaneous	<u>20</u>	<u>5</u>	<u>20</u>	<u>5</u>	<u>-</u>
Minnesota	-	-	-	-	-
Wisconsin	20	5	20	5	-
Michigan	-	-	-	-	-
Hardwood total ...	<u>540</u>	<u>130</u>	<u>540</u>	<u>130</u>	<u>-</u>
Minnesota	-	-	-	-	-
Wisconsin	540	130	540	130	-
Michigan	-	-	-	-	-
All species	<u>2,080</u>	<u>425</u>	<u>2,080</u>	<u>425</u>	<u>-</u>
Minnesota	1,450	280	1,450	280	-
Wisconsin	630	145	630	145	-
Michigan	-	-	-	-	-

NOTE: Miscellaneous species - Wisconsin, Hickory 50 percent
Ash 50 percent

Table 16.- Chemical-wood timber drain in the Lake States - 1947

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Maple	10,880	2,930	10,880	2,590	340
Minnesota	-	-	-	-	-
Wisconsin	530	150	530	130	20
Michigan	10,350	2,780	10,350	2,460	320
Birch	5,040	1,360	5,040	1,200	160
Minnesota	-	-	-	-	-
Wisconsin	210	60	210	50	10
Michigan	4,830	1,300	4,830	1,150	150
Elm	690	180	690	160	20
Minnesota	-	-	-	-	-
Wisconsin	-	-	-	-	-
Michigan	690	180	690	160	20
Beech	1,370	360	1,370	320	40
Minnesota	-	-	-	-	-
Wisconsin	140	30	140	30	-
Michigan	1,230	330	1,230	290	40
Oak	440	120	440	110	10
Minnesota	-	-	-	-	-
Wisconsin	40	10	40	10	-
Michigan	400	110	400	100	10
Aspen	560	150	560	130	20
Minnesota	-	-	-	-	-
Wisconsin	560	150	560	130	20
Michigan	-	-	-	-	-
Miscellaneous	690	180	690	160	20
Minnesota	-	-	-	-	-
Wisconsin	20	-	20	-	-
Michigan	670	180	670	160	20
Hardwood total ...	19,670	5,280	19,670	4,670	610
Minnesota	-	-	-	-	-
Wisconsin	1,500	400	1,500	350	50
Michigan	18,170	4,880	18,170	4,320	560
All species	19,670	5,280	19,670	4,670	610
Minnesota	-	-	-	-	-
Wisconsin	1,500	400	1,500	350	50
Michigan	18,170	4,880	18,170	4,320	560

NOTE: Miscellaneous species - Ash Cherry
 Wisconsin (percent) 100 -
 Michigan (percent) 95 5

Table 17.- Excelsior timber drain in the Lake States - 1947

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Basswood	75	285	75	20	265
Minnesota	10	20	10	5	15
Wisconsin	60	255	60	15	240
Michigan	5	10	5	-	10
Aspen	440	6,880	440	120	6,760
Minnesota	40	120	40	10	110
Wisconsin	300	3,080	300	80	3,000
Michigan	100	3,680	100	30	3,650
Hardwood total ...	515	7,165	515	140	7,025
Minnesota	50	140	50	15	125
Wisconsin	360	3,335	360	95	3,240
Michigan	105	3,690	105	30	3,660
All species	515	7,165	515	140	7,025
Minnesota	50	140	50	15	125
Wisconsin	360	3,335	360	95	3,240
Michigan	105	3,690	105	30	3,660

Table 18.- Annual fence-post timber drain in the Lake States (5-year average 1945-49)

Species and origin		Net timber drain, by size class				Net timber drain, by size class				
		'M bd.ft.	'M cu.ft.	'M bd.ft.	'M cu.ft.	'M bd.ft.	'M cu.ft.	'M bd.ft.	'M cu.ft.	
		Total	Saw-timber trees	Pole-timber trees	Total	Saw-timber trees	Pole-timber trees	Total	Saw-timber trees	Pole-timber trees
Red pine		120	100	20	120	100	20	250	450	80
Minnesota ...		60	50	10	60	50	10	130	230	40
Wisconsin ...		60	50	10	60	50	10	60	110	20
Michigan		-	-	-	-	-	-	60	110	20
Jack pine		320	280	70	320	280	70	150	280	50
Minnesota ...		170	150	40	170	150	40	30	60	10
Wisconsin ...		90	80	20	90	80	20	60	110	20
Michigan		60	50	10	60	50	10	60	110	20
Balsam		140	140	40	140	140	40	290	520	90
Minnesota ...		110	110	30	110	110	30	30	60	10
Wisconsin ...		30	30	10	30	30	10	130	230	40
Michigan		-	-	-	-	-	-	130	230	40
Tamarack		430	400	100	430	400	100	9,150	16,510	2,690
Minnesota ...		170	150	40	170	150	40	1,880	3,410	550
Wisconsin ...		170	170	40	170	170	40	4,890	8,810	1,440
Michigan		90	80	20	90	80	20	2,380	4,290	700
Cedar		4,200	3,960	900	4,200	3,960	900	880	1,540	260
Minnesota ...		570	510	130	570	510	130	440	800	130
Wisconsin ...		790	760	170	790	760	170	250	450	70
Michigan		2,840	2,690	600	2,840	2,690	600	190	290	60
Hemlock		90	80	20	90	80	20	380	690	120
Minnesota ...		-	-	-	-	-	-	60	120	20
Wisconsin ...		60	50	10	60	50	10	190	340	60
Michigan		30	30	10	30	30	10	130	230	40
Softwood total		5,300	4,960	1,150	5,300	4,960	1,150	11,100	19,990	3,290
Minnesota ...		1,080	970	250	1,080	970	250	2,570	4,680	760
Wisconsin ...		1,200	1,140	260	1,200	1,140	260	5,580	10,050	1,650
Michigan		3,020	2,850	640	3,020	2,850	640	2,950	5,260	880
All species ...								16,400	24,950	4,440
Minnesota ...								3,650	5,650	1,010
Wisconsin ...								6,780	11,190	1,910
Michigan								5,970	8,110	1,520

Table 19.- Utility pole timber drain in the Lake States - 1947

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Red pine	950	230	950	200	30
Minnesota	950	230	950	200	30
Wisconsin	-	-	-	-	-
Michigan	-	-	-	-	-
Jack pine	3,420	850	3,420	725	125
Minnesota	3,400	840	3,400	720	120
Wisconsin	20	10	20	5	5
Michigan	-	-	-	-	-
Cedar	4,420	1,840	4,420	1,080	760
Minnesota	3,090	1,230	3,090	770	460
Wisconsin	310	120	310	70	50
Michigan	1,020	490	1,020	240	250
Softwood total ...	8,790	2,920	8,790	2,005	915
Minnesota	7,440	2,300	7,440	1,690	610
Wisconsin	330	130	330	75	55
Michigan	1,020	490	1,020	240	250
All species	8,790	2,920	8,790	2,005	915
Minnesota	7,440	2,300	7,440	1,690	610
Wisconsin	330	130	330	75	55
Michigan	1,020	490	1,020	240	250

Table 20.- Hewed ties timber drain in the Lake States - 1947

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Spruce	<u>5</u>	<u>-</u>	<u>5</u>	<u>-</u>	<u>-</u>
Minnesota	-	-	-	-	-
Wisconsin	-	-	-	-	-
Michigan	5	-	5	-	-
Tamarack	<u>5</u>	<u>-</u>	<u>5</u>	<u>-</u>	<u>-</u>
Minnesota	5	-	5	-	-
Wisconsin	-	-	-	-	-
Michigan	-	-	-	-	-
Cedar	<u>45</u>	<u>20</u>	<u>45</u>	<u>10</u>	<u>10</u>
Minnesota	5	-	5	-	-
Wisconsin	-	-	-	-	-
Michigan	40	20	40	10	10
Hemlock	<u>10</u>	<u>-</u>	<u>10</u>	<u>-</u>	<u>-</u>
Minnesota	-	-	-	-	-
Wisconsin	-	-	-	-	-
Michigan	10	-	10	-	-
Softwood total ...	<u>65</u>	<u>20</u>	<u>65</u>	<u>10</u>	<u>10</u>
Minnesota	10	-	10	-	-
Wisconsin	-	-	-	-	-
Michigan	55	20	55	10	10
All species	<u>65</u>	<u>20</u>	<u>65</u>	<u>10</u>	<u>10</u>
Minnesota	10	-	10	-	-
Wisconsin	-	-	-	-	-
Michigan	55	20	55	10	10

Net timber drain, by size class				Net timber drain, by size class			
Species and origin	'M bd.ft. 'M cu.ft.	'M bd.ft. 'M cu.ft.	'M bd.ft. 'M cu.ft.	Total	Saw-timber trees	Pole-timber trees	
White pine ...	50	15	50	10	5		
Minnesota ..	45	15	45	10	5		
Wisconsin ..	-	-	-	-	-		
Michigan ...	5	-	5	-	-		
Red pine	255	65	255	55	10		
Minnesota ..	255	65	255	55	10		
Wisconsin ..	-	-	-	-	-		
Michigan ...	-	-	-	-	-		
Jack pine	4,395	935	4,395	790	145		
Minnesota ..	4,395	935	4,395	790	145		
Wisconsin ..	-	-	-	-	-		
Michigan ...	-	-	-	-	-		
Spruce	5	-	5	-	-		
Minnesota ..	-	-	-	-	-		
Wisconsin ..	-	-	-	-	-		
Michigan ...	5	-	5	-	-		
Tamarack	5,115	1,635	5,115	1,020	615		
Minnesota ..	4,025	855	4,025	725	130		
Wisconsin ..	90	115	90	25	90		
Michigan ...	1,000	665	1,000	270	395		
Cedar	2,600	1,340	2,600	645	695		
Minnesota ..	1,035	265	1,035	225	40		
Wisconsin ..	55	70	55	15	55		
Michigan ...	1,510	1,005	1,510	405	600		
Hemlock	365	245	365	95	150		
Minnesota ..	-	-	-	-	-		
Wisconsin ..	5	5	5	-	5		
Michigan ...	360	240	360	95	145		
Softwood total	12,785	4,235	12,785	2,615	1,620		
Minnesota ..	9,755	2,135	9,755	1,805	330		
Wisconsin ..	150	190	150	40	150		
Michigan ...	2,880	1,910	2,880	770	1,140		
Maple	5,970	2,060	5,970	1,540	520		
Minnesota ..	110	30	110	30	-		
Wisconsin ..	250	100	250	65	35		
Michigan ...	5,610	1,930	5,610	1,445	485		
Birch	1,850	635	1,850	475	160		
Minnesota ..	30	10	30	10	-		
Wisconsin ..	160	60	160	40	20		
Michigan ...	1,660	565	1,660	425	140		
Elm	495	160	495	130	30		
Minnesota ..	170	45	170	45	-		
Wisconsin ..	35	15	35	10	5		
Michigan ...	290	100	290	75	25		
Beech	345	120	345	90	30		
Minnesota ..	-	-	-	-	-		
Wisconsin ..	-	-	-	-	-		
Michigan ...	345	120	345	90	30		
Oak	60	25	60	15	10		
Minnesota ..	-	-	-	-	-		
Wisconsin ..	20	10	20	5	5		
Michigan ...	40	15	40	10	5		
Miscellaneous	305	85	305	85	-		
Minnesota ..	305	85	305	85	-		
Wisconsin ..	-	-	-	-	-		
Michigan ...	-	-	-	-	-		
Hardwood total	9,025	3,085	9,025	2,335	750		
Minnesota ..	615	170	615	170	-		
Wisconsin ..	465	185	465	120	65		
Michigan ...	7,945	2,730	7,945	2,045	685		
All species ..	21,810	7,320	21,810	4,950	2,370		
Minnesota ..	10,370	2,305	10,370	1,975	330		
Wisconsin ..	615	375	615	160	215		
Michigan ...	10,825	4,640	10,825	2,815	1,825		

NOTE: Miscellaneous species - Minnesota, comprised of ash 100 percent.

Table 22.- Cooperago timber drain in the Lake States - 1947

Species and origin	Not timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Maple	<u>100</u>	<u>20</u>	<u>100</u>	<u>20</u>	<u>-</u>
Minnesota	100	20	100	20	-
Wisconsin	-	-	-	-	-
Michigan	-	-	-	-	-
Basswood	<u>535</u>	<u>160</u>	<u>535</u>	<u>130</u>	<u>30</u>
Minnesota	255	60	255	60	-
Wisconsin	280	100	280	70	30
Michigan	-	-	-	-	-
Elm	<u>1,525</u>	<u>330</u>	<u>1,525</u>	<u>330</u>	<u>-</u>
Minnesota	1,515	330	1,515	330	-
Wisconsin	10	-	10	-	-
Michigan	-	-	-	-	-
Oak	<u>785</u>	<u>210</u>	<u>785</u>	<u>180</u>	<u>30</u>
Minnesota	505	110	505	110	-
Wisconsin	280	100	280	70	30
Michigan	-	-	-	-	-
Aspen	<u>290</u>	<u>160</u>	<u>290</u>	<u>80</u>	<u>80</u>
Minnesota	200	60	200	60	-
Wisconsin	90	100	90	20	80
Michigan	-	-	-	-	-
Cottonwood	<u>405</u>	<u>90</u>	<u>405</u>	<u>90</u>	<u>-</u>
Minnesota	405	90	405	90	-
Wisconsin	-	-	-	-	-
Michigan	-	-	-	-	-
Miscellaneous ...	<u>50</u>	<u>10</u>	<u>50</u>	<u>10</u>	<u>-</u>
Minnesota	50	10	50	10	-
Wisconsin	-	-	-	-	-
Michigan	-	-	-	-	-
Hardwood total ..	<u>3,690</u>	<u>980</u>	<u>3,690</u>	<u>840</u>	<u>140</u>
Minnesota	3,030	680	3,030	680	-
Wisconsin	660	300	660	160	140
Michigan	-	-	-	-	-
All species	<u>3,690</u>	<u>980</u>	<u>3,690</u>	<u>840</u>	<u>140</u>
Minnesota	3,030	680	3,030	680	-
Wisconsin	660	300	660	160	140
Michigan	-	-	-	-	-

NOTE: Miscellaneous species - Minnesota, Ash 100 percent.

Table 23.- Annual miscellaneous products timber drain in the Lake States
(5-year average 1945-49)

Species and Origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
White pine	750	220	750	150	70
Minnesota	250	70	250	50	20
Wisconsin	190	70	190	40	30
Michigan	310	80	310	60	20
Red pine	410	110	410	80	30
Minnesota	200	50	200	40	10
Wisconsin	50	20	50	10	10
Michigan	160	40	160	30	10
Jack pine	950	270	950	190	80
Minnesota	390	110	390	80	30
Wisconsin	140	50	140	30	20
Michigan	420	110	420	80	30
Spruce	250	70	250	50	20
Minnesota	100	30	100	20	10
Wisconsin	50	10	50	10	-
Michigan	100	30	100	20	10
Balsam	660	180	660	130	50
Minnesota	250	70	250	50	20
Wisconsin	50	20	50	10	10
Michigan	360	90	360	70	20
Tamarack	250	70	250	50	20
Minnesota	100	30	100	20	10
Wisconsin	50	10	50	10	-
Michigan	100	30	100	20	10
Cedar	1,420	760	1,420	340	420
Minnesota	340	100	340	70	30
Wisconsin	580	210	580	120	90
Michigan	500	450	500	150	300
Hemlock	150	50	150	30	20
Minnesota	-	-	-	-	-
Wisconsin	50	20	50	10	10
Michigan	100	30	100	20	10
Softwood total ...	4,840	1,730	4,840	1,020	710
Minnesota	1,630	460	1,630	330	130
Wisconsin	1,160	410	1,160	240	170
Michigan	2,050	860	2,050	450	410

Table 23.- Annual miscellaneous products timber drain in the Lake States
(5-year average 1945-49) (Continued)

Species and origin	Not timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Maple	2,080	520	2,080	400	120
Minnesota	-	-	-	-	-
Wisconsin	410	130	410	90	40
Michigan	1,670	390	1,670	310	80
Birch	1,760	360	1,760	340	20
Minnesota	1,570	310	1,570	300	10
Wisconsin	140	40	140	30	10
Michigan	50	10	50	10	-
Basswood	780	200	780	160	40
Minnesota	370	80	370	70	10
Wisconsin	320	100	320	70	30
Michigan	90	20	90	20	-
Elm	430	100	430	80	20
Minnesota	-	-	-	-	-
Wisconsin	-	-	-	-	-
Michigan	430	100	430	80	20
Beech	2,890	800	2,890	640	160
Minnesota	-	-	-	-	-
Wisconsin	-	-	-	-	-
Michigan	2,890	800	2,890	640	160
Oak	510	120	510	100	20
Minnesota	50	10	50	10	-
Wisconsin	30	10	30	10	-
Michigan	430	100	430	80	20
Aspen	5,340	2,190	5,340	1,300	890
Minnesota	4,280	1,440	4,280	1,080	360
Wisconsin	360	540	360	90	450
Michigan	700	210	700	130	80
Miscellaneous	390	100	390	80	20
Minnesota	-	-	-	-	-
Wisconsin	70	30	70	20	10
Michigan	320	70	320	60	10
Hardwood total ...	14,180	4,390	14,180	3,100	1,290
Minnesota	6,270	1,840	6,270	1,460	380
Wisconsin	1,330	850	1,330	310	540
Michigan	6,580	1,700	6,580	1,330	370
All species	19,020	6,120	19,020	4,120	2,000
Minnesota	7,900	2,300	7,900	1,790	510
Wisconsin	2,490	1,260	2,490	550	710
Michigan	8,630	2,560	8,630	1,780	780

Table 24.- Total timber drain in the Lake States - 1947

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
White pine	62,975	18,365	62,975	13,520	4,845
Minnesota	9,665	3,825	9,665	2,090	1,735
Wisconsin	32,435	8,990	32,435	6,980	2,010
Michigan	20,875	5,550	20,875	4,450	1,100
Red pine	55,530	16,530	55,530	11,530	5,000
Minnesota	20,585	7,535	20,585	4,275	3,260
Wisconsin	25,905	6,675	25,905	5,365	1,310
Michigan	9,040	2,320	9,040	1,890	430
Jack pine	75,305	59,395	75,305	15,805	43,590
Minnesota	51,445	35,865	51,445	10,720	25,145
Wisconsin	9,170	14,600	9,170	2,095	12,505
Michigan	14,690	8,930	14,690	2,990	5,940
Spruce	22,770	32,000	22,770	4,710	27,290
Minnesota	10,630	18,600	10,630	2,240	16,360
Wisconsin	2,360	2,860	2,360	490	2,370
Michigan	9,780	10,540	9,780	1,980	8,560
Balsam	15,550	25,090	15,550	3,310	21,780
Minnesota	6,930	10,570	6,930	1,580	8,990
Wisconsin	2,340	4,530	2,340	490	4,040
Michigan	6,280	9,990	6,280	1,240	8,750
Tamarack	11,370	8,025	11,370	3,660	4,365
Minnesota	7,710	5,355	7,710	2,605	2,750
Wisconsin	2,010	1,585	2,010	615	970
Michigan	1,650	1,085	1,650	440	645
Cedar	22,275	10,880	22,275	5,155	5,725
Minnesota	5,840	2,485	5,840	1,405	1,080
Wisconsin	4,095	2,060	4,095	985	1,075
Michigan	12,340	6,335	12,340	2,765	3,570
Hemlock	236,555	64,425	236,555	48,995	15,430
Minnesota	-	-	-	-	-
Wisconsin	62,105	20,955	62,105	13,370	7,585
Michigan	174,450	43,470	174,450	35,625	7,845
Softwood total ...	502,330	234,710	502,330	106,685	128,025
Minnesota	112,805	84,235	112,805	24,915	59,320
Wisconsin	140,420	62,255	140,420	30,390	31,865
Michigan	249,105	88,220	249,105	51,380	36,840

Table 24.- Total timber drain in the Lake States - 1947
(Continued)

Species and origin	Not timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Maple	312,790	93,000	312,790	76,955	16,045
Minnesota	3,140	1,365	3,140	900	465
Wisconsin	78,190	24,365	78,190	19,690	4,675
Michigan	231,460	67,270	231,460	56,365	10,905
Birch	115,960	36,180	115,960	28,745	7,435
Minnesota	8,010	3,315	8,010	2,450	865
Wisconsin	27,740	10,120	27,740	7,240	2,880
Michigan	80,210	22,745	80,210	19,055	3,690
Basswood	64,390	19,895	64,390	16,010	3,885
Minnesota	13,925	5,140	13,925	3,875	1,265
Wisconsin	28,330	8,245	28,330	6,735	1,510
Michigan	22,135	6,510	22,135	5,400	1,110
Elm	99,590	34,540	99,590	26,455	8,085
Minnesota	19,215	7,610	19,215	5,665	1,945
Wisconsin	35,955	11,270	35,955	8,945	2,325
Michigan	44,420	15,660	44,420	11,845	3,815
Beech	36,305	10,130	36,305	8,620	1,510
Minnesota	-	-	-	-	-
Wisconsin	1,290	430	1,290	340	90
Michigan	35,015	9,700	35,015	8,280	1,420
Oak	160,935	78,280	160,935	47,540	30,740
Minnesota	21,325	12,460	21,325	7,160	5,300
Wisconsin	93,960	42,665	93,960	26,560	16,105
Michigan	45,650	23,155	45,650	13,820	9,335
Aspen	136,790	145,920	136,790	38,910	107,010
Minnesota	66,180	54,210	66,180	18,860	35,350
Wisconsin	39,090	52,630	39,090	11,290	41,340
Michigan	31,520	39,080	31,520	8,760	30,320
Cottonwood	11,485	3,355	11,485	2,710	645
Minnesota	6,875	2,125	6,875	1,610	515
Wisconsin	1,770	470	1,770	420	50
Michigan	2,840	760	2,840	680	80
Miscellaneous	39,895	16,050	39,895	11,720	4,330
Minnesota	9,275	4,865	9,275	13,475	1,390
Wisconsin	14,510	5,395	14,510	3,925	1,470
Michigan	16,110	5,790	16,110	4,320	1,470
Hardwood total ...	978,140	437,350	978,140	257,665	179,685
Minnesota	147,945	91,090	147,945	43,995	47,095
Wisconsin	320,835	155,590	320,835	85,145	70,445
Michigan	509,360	190,670	509,360	128,525	62,145
All species	1,480,470	672,060	1,480,470	364,350	307,710
Minnesota	260,750	175,325	260,750	68,910	106,415
Wisconsin	461,255	217,845	461,255	115,535	102,310
Michigan	758,465	278,890	758,465	179,905	98,985

NOTE: Miscellaneous species -

	Ash	Cherry	Hickory	Walnut	Yellow- poplar	Other
Minnesota (percent)	39	.5	-	1.5	-	59
Wisconsin (percent)	66	.5	1.5	2	-	30
Michigan (percent)	54	6	4	5	1	30